Section 2
Project Planning

“Plans are nothing; Planning is everything”
– Dwight D.Eisenhower –

How to Define a Project

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REMINDING: A project is an **unique** set of activities designed to **accomplish specific business goal(s)**.

A project has a defined:

- Beginning time
- Ending time
- Defined scope (or list of tasks)
- Assigned resources

How to Define a Project

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What if management just says ‘start’?

WHO are the users, beneficiaries, customers and the impacts to them?

WHAT are the business goals or objectives that this project will support?

WHY is the project being taken? Its purpose?

SCOPE exactly what is this project to do or accomplish?

SUCCESS CRITERIA what is the criteria that will meet customer expectations?

VALUE what is the business value (benefits, revenue, reduce costs …) of the project?

Project Definition Document (PDD)

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Before planning, make/collect/clarify the Project Definition Document (PDD)

Project Definition Document
（プロジェクト定義文書）

- Purpose
- Goals/Objectives
- Success Criteria
- What’s in/out of scope
- Assumptions
- Constraints
- Preliminary Estimates
- Preliminary Schedule
- Risks
- Stakeholders
- **Policies and Standards**

Prepare a summary presentation (PPTX) for each article → **Kick off Meeting Presentation**

Example: Project Definition Document (PDD)

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Purpose

- Replace the current student enrollment system to increase enrollments

Goals and Objectives

- Improve student services
- Provide better financial management
- Avoid 'end of life' of old hardware

Success Criteria

- All data successfully migrated and accessible on the new system
- New system 'on line' by December 1st

Example: Project Definition Document (PDD)

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What's in or out of scope

- In: student enrollment, financial management, cashier, A/R
- Out: sales, marketing, student grades

Assumptions

- Insufficient budget for adding IT staff
- No off-the-shelf solution available
- Must migrate legacy data

Constraints

- Project must begin by July 1st
- Data migration must be performed during summer (low usage) months

Example: Project Definition Document (PDD)

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Stakeholders

- Dean of the University
- IT Operations Director
- Chief Financial Officer

Preliminary Schedule

- Project Planning: Jan 1
- Specification Development: Feb 1
- System Release 1: Apr 1

Preliminary Estimates

- Consulting: $100K
- Infrastructure: $150K
- Development: $250K

Let’s Check Our Work

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- ✓ Is it clear why this project is being undertaken?
- ✓ Is the project scope clear and concise?
- ✓ Are the project stakeholders on-board and focused?
- ✓ Is the deliverable clearly and achievable?
- ✓ Are the potential risks clearly identified and responses planned?
- ✓ Have all stakeholders reviewed, agreed, and approved the project to move forward?

Build a Project Plan

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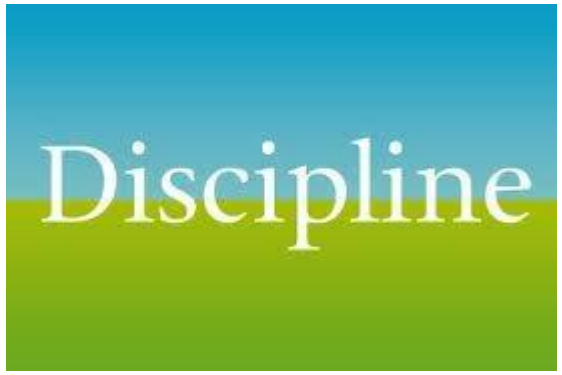
The Essence of Project Planning

Project planning is a disciplined process for completing a project successfully



- Set objectives
- Identify deliverables
- Determine estimates
- Determine the schedule
- Apply resources

Project Plan

The entire set of documents that will be used for project execution and control

Project Planning Processes

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MANAGED SUBJECTS	PROJECT MANAGEMENT PROCESS GROUPS				
	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Integration	*10. Proposals and Estimates* *11.Initiating project*	20. Creating project policies 28. Creating project plans	30. Managing project work 31. Managing configurations	40. Monitoring and controlling project work 41. Change control	50. Closing the project
Scope		22. Creating project WBS			
Time		23. Creating project schedule			
Cost		*27. Develop project budget*		*45. Monitoring project budget*	
Quality		24. Creating quality plan	34. Managing quality	42. Monitoring quality	
Human resources		21. Defining project organization	32. Training the project team		
Communication			33. Managing communication		
Stakeholder					
Risk		25. Planning Risk Management	35. Managing risk responses	43. Monitoring risks	
Procurement		26. Planning procurements		44. Managing procurements	

Basic Steps to Build a Project Plan

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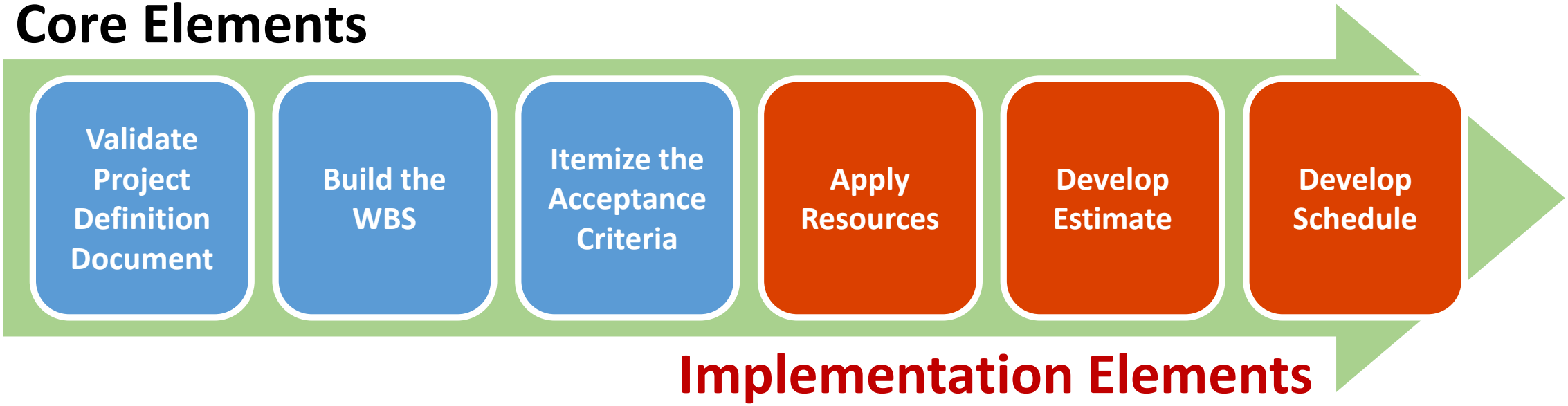

Step 1 – Validate PDD

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- Assemble the team including the necessary subject matter experts you need to develop project plan.
- With the team, validate the contents of the project definition document (PDD)
  - This might lead to action items to update the plan (and usually does)
  - You may need to revisit requirements with stakeholders
  - Based on the time lag between the completion of the PDD and the planning process, you may need to revisit portions of the PDD
- Do forming the development team (2.1 Defining project organization)

- Team kickoff: Prepare Kick-off presentation slides and Do Project Kick-off Meeting

- Project Definition validated ☑

Step 2 – Build the WBS

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- Understand all of the work that needs to be done and itemize
- Use the WBS: work breakdown approach to document
  - **Decomposition**: divides project scope and deliverables into smaller, more manageable parts.
  - The lowest level of the WBS is the **work package**.
- A WBS shows each work package, and its work activities/tasks that, when executed, will fulfil the project deliverables as outlined in the PDD.
  - In fact, you should layout a list of well-described deliverables in the terms or words of the stakeholders, a little more business-oriented (even a non-technical party could easily understand what have been agreed in order to be produced in our project).
- 100% rule, ask this question: “if all of the work packages are completed will the project be complete?”
  - If not, then you are missing tasks
  - If yes, then you are complete.

Example: Work Breakdown Structure

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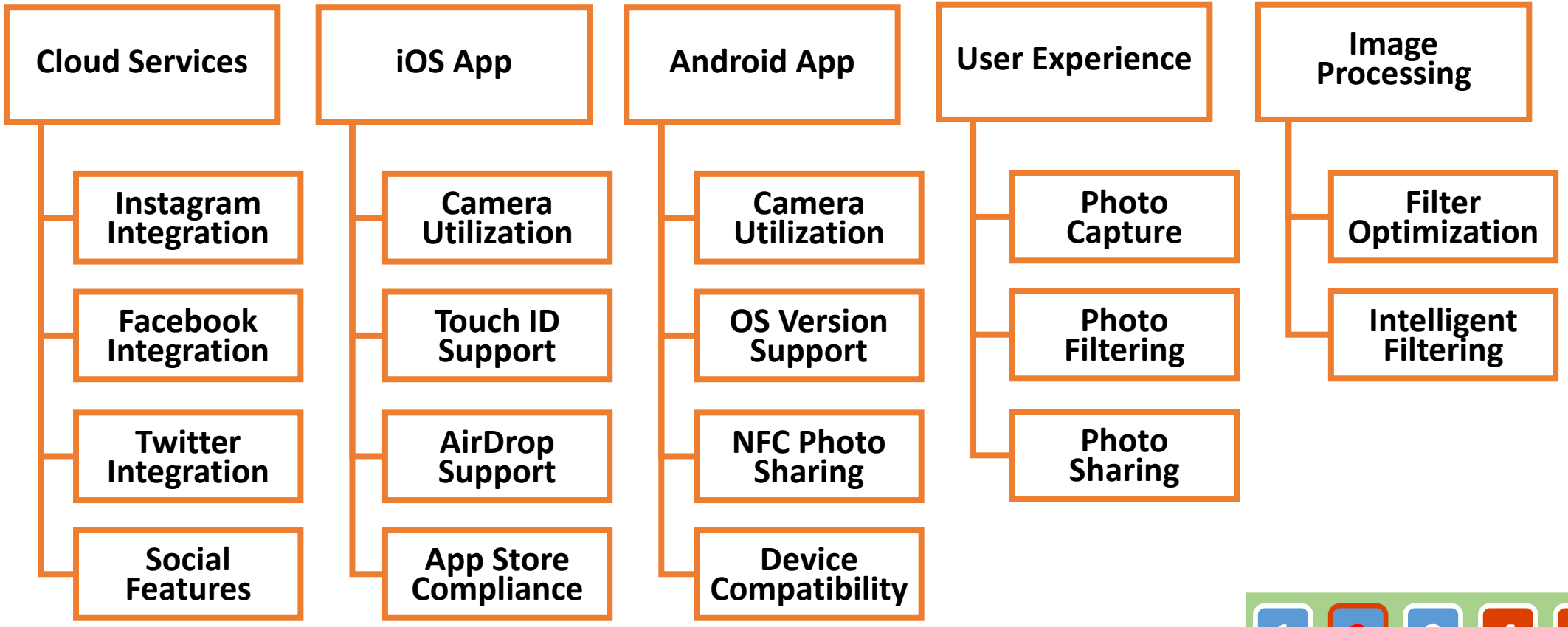
Hierarchical and incremental decomposition of the project into phases, deliverables and work packages



Example: Defining Activities from a Work Package

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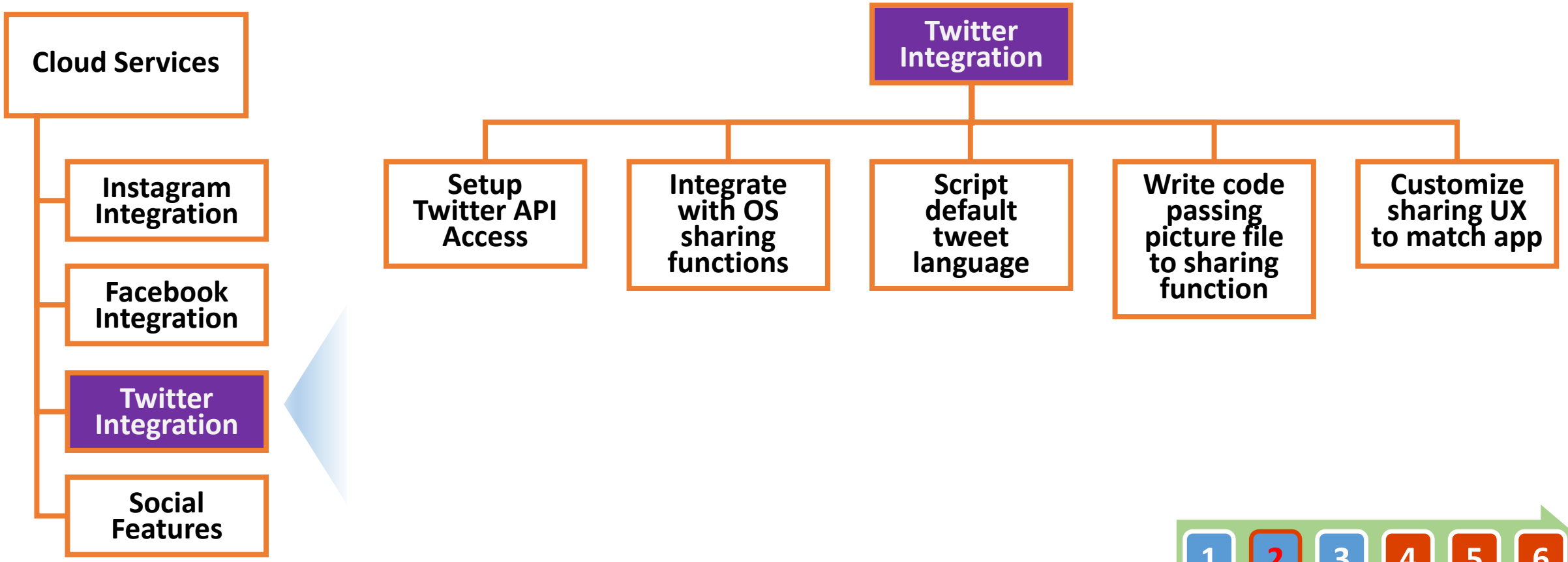

Example: The WBS List

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Item #	Description
Project Setup/Delivery Tasks	
100.10	Setup new workspace and tools for project management
100.20	Setup the development environments
100.30	Add/modify additional tables/fields in database
100.40	Develop team kickoff: assignments
100.50	Generating QA builds and QA environement for testing
Development Tasks - Subsystem A	
200.10	Develop the master page, CSS, bootstrap as a basic for dev
200.20	Develop the navigation, header, footer, logo, etc
200.30	Develop the error pages - Group ID missing and valid
200.40	Private Label Usage and Support
200.50	Develop Registration landing page
200.60	Develop enrollment confirmation email / template / email out

Step 3 - Itemize the Acceptance Criteria

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- **Acceptance criteria (AC)** are the conditions that a software product must meet to be accepted by a user, a customer, or other systems. They are unique for each deliverable and define the feature behavior from the end-user's perspective.
- Acceptance criteria main purposes:
  - **Making the feature scope more detailed**: AC define the boundaries of deliverables. They provide precise details on functionality that help the team understand whether the deliverable is completed and works as expected.
  - **Describing negative scenarios**: AC may require the system to recognize unsafe password inputs and prevent a user from proceeding further. Invalid password format is an example of a so-called negative scenario when a user does invalid inputs or behaves unexpectedly. AC define these scenarios and explain how the system must react to them.
  - **Setting communication:** AC synchronize the visions of the client and the development team. They ensure that everyone has a common understanding of the requirements: Developers know exactly what kind of behavior the feature must demonstrate
  - **Streamlining acceptance testing:** AC are the basis of acceptance testing of deliverables. Each acceptance criterion must be independently testable and thus have clear pass or fail scenarios..
  - **Conducting feature evaluations:** AC specify what exactly must be developed by the team. Once the team has precise requirements, they can split user stories into tasks that can be correctly estimated.
- Acceptance criteria can be phased.

Best Practices of Writing Acceptance Criteria

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- Document criteria before development.
- Don’t make AC too narrow.
- Keep your criteria achievable.
- Keep AC measurable and not too broad.
- Avoid technical details.
- Reach consensus.
- Write testable AC.
- Write in active voice, simple, concise sentences, first-person.
- Avoid negative sentences.

Acceptance Criteria Examples

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- All use cases must be demonstrable.
- This feature set must be in production by May 1st.
- The users are trained and productive by September 15th.
- Student can register and pay for a class.
- An employee can register, login and select medical plans.
- Tip: system must perform all use cases and comply with the specification

Example: Itemize the Acceptance Criteria

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Item #	Description	Acceptance Criteria
Project Setup/Delivery Tasks		
100.10	Setup new workspace and tools for project management	
100.20	Setup the development environments	
100.30	Add/modify additional tables/fields in database	
100.40	Develop team kickoff: assignments	
100.50	Generating QA builds and QA environement for testing	
Development Tasks - Subsystem A		
200.10	Develop the master page, CSS, bootstrap as a basic for dev	
200.20	Develop the navigation, header, footer, logo, etc	
200.30	Develop the error pages - Group ID missing and valid	
200.40	Private Label Usage and Support	
200.50	Develop Registration landing page	Student can register and pay for a class
200.60	Develop enrollment confirmation email / template / email out	An registered student can select and enroll medical plans

Step 4 - Itemize the Resources You Need

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- Resources are usually people and tools, but may include other items
- For each WBS entry, identify:
  - **Who** will work that task
  - **When** they are needed
- In addition, you may need resource details:
  - Role description
  - Required skills
  - Training needs
  - Skill / experience level

Example: Itemize the Resources You Need

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Item #	Description	Who	When
Project Setup/Delivery Tasks			
100.10	Setup new workspace and tools for project management	PM	1-Apr
100.20	Setup the development environments	TL	1-Apr
100.30	Add/modify additional tables/fields in database	TL/PS1	14-Apr
100.40	Develop team kickoff: assignments	PM	14-Apr
100.50	Generating QA builds and QA environement for testing	TS	1-May
Development Tasks - Subsystem A			
200.10	Develop the master page, CSS, bootstrap as a basic for dev	TBD	21-Apr
200.20	Develop the navigation, header, footer, logo, etc	PS1	21-Apr
200.30	Develop the error pages - Group ID missing and valid	PS2	6-May
200.40	Private Label Usage and Support	PS3	12-May
200.50	Develop Registration landing page	PS4	1-May
200.60	Develop enrollment confirmation email / template / email out	PS5	1-May

Step 5 – Estimate the Work

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- Prerequisites:
  - WBS complete
  - Resources assigned
- For each task make an estimate of hours based on the resource you have assigned.
- Use ‘Confident Factor’ to ensure completeness of each task.
- If you have assigned a generic resource (like ‘software engineer’ or ‘TBD’) that is OK

Example: Estimate the Work

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Item #	Description	Who	Quoted Hours	Confident Factor	Estimated Hours	When
Project Setup/Delivery Tasks						
100.10	Setup new workspace and tools for project management	PM	4	100%	4	1-Apr
100.20	Setup the development environments	TL	2	100%	2	1-Apr
100.30	Add/modify additional tables/fields in database	TL/PS1	40	80%	50	14-Apr
100.40	Develop team kickoff: assignments	PM	20	50%	40	14-Apr
100.50	Generating QA builds and QA environement for testing	TS	40	100%	40	1-May
Development Tasks - Subsystem A						
200.10	Develop the master page, CSS, bootstrap as a basic for dev	TBD	120	80%	150	21-Apr
200.20	Develop the navigation, header, footer, logo, etc	PS1	120	100%	120	21-Apr
200.30	Develop the error pages - Group ID missing and valid	PS2	20	80%	25	6-May
200.40	Private Label Usage and Support	PS3	5	100%	5	12-May
200.50	Develop Registration landing page	PS4	40	50%	80	1-May
200.60	Develop enrollment confirmation email / template / email out	PS5	40	100%	40	1-May
			451		556	

Step 6 – Develop a Schedule

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- A project schedule will have start and end dates for each task
  - And ultimately the entire project
- Prerequisites for the scheduling process:
- WBS (all tasks)
  - Resources assigned
  - Estimates for each task
  - Confidence factor
  - Task relationships (dependencies)

Example: Develop a Schedule

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Item #	Description	Who	Quoted Hours	Estimated Hours	When	Start Date	End Date
Project Setup/Delivery Tasks							
100.10	Setup new workspace and tools for project management	PM	4	4	1-Apr	1-Apr	1-Apr
100.20	Setup the development environments	TL	2	2	1-Apr	1-Apr	1-Apr
100.30	Add/modify additional tables/fields in database	TL/PS1	40	50	14-Apr	14-Apr	22-Apr
100.40	Develop team kickoff: assignments	PM	20	40	14-Apr	14-Apr	21-Apr
100.50	Generating QA builds and QA environement for testing	TS	40	40	1-May	1-May	7-May
Development Tasks - Subsystem A							
200.10	Develop the master page, CSS, bootstrap as a basic for dev	TBD	120	150	21-Apr	21-Apr	17-May
200.20	Develop the navigation, header, footer, logo, etc	PS1	120	120	21-Apr	21-Apr	12-May
200.30	Develop the error pages - Group ID missing and valid	PS2	20	25	6-May	6-May	11-May
200.40	Private Label Usage and Support	PS3	5	5	12-May	12-May	12-May
200.50	Develop Registration landing page	PS4	40	80	1-May	1-May	14-May
200.60	Develop enrollment confirmation email / template / email out	PS5	40	40	1-May	1-May	7-May
			451	556		1-Apr	17-May

Resource Load Example

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		1	2	3	4	5	6	7	8	
Resource	**Est. Hours**	**29-Mar**	**5-Apr**	**12-Apr**	**19-Apr**	**26-Apr**	**3-May**	**10-May**	**17-May**	**% On Project**
PM	44	4		20	20					13.8%
TL	27	2		10	15					8.4%
TS	40						40			12.5%
PS1	145			10	37.5	37.5	37.5	22.5		45.3%
PS2	25						12.5	12.5		7.8%
PS3	5							5		1.6%
PS4	80						40	40		25.0%
PS5	40						40			12.5%
TBD	150				22.5	40	40	40	7.5	46.9%
TOTAL Hrs/Wk		**6**	**0**	**40**	**95**	**77.5**	**210**	**120**	**7.5**	
WKLY CUM	**556**	**6**	**6**	**46**	**141**	**218.5**	**428.5**	**548.5**	**556**	

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Key Supporting Project Planning Elements

- There are many other supporting planning elements to consider and include
- These other planning elements are more ‘around’ the **process** of running the project – aka. **project control** and **execution**.
- How will you do:
  - Project status reporting?
  - Requirements management?
  - Quality management?
  - Change management?
  - Is there more?

Project Plan Elements for Project Control

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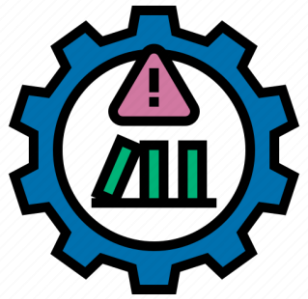
Communication and Reporting

Change Control

Configuration Management

Requirements Management



Risk Management

Issue Management

Quality Management

Procurement Management

Project Plan Elements for Project Control

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Communication and Reporting:

- Communication roadmap:
  - Determine what information you need to provide
  - Determine the form and content of that information
  - Determine the source of data for that information
  - Determine who you need to provide it to
  - Determine how often you will provide it
  - Determine how to monitor and measure that information
- Gather stakeholder information and communication preferences
- Set your regular communication types, schedules and goals:
  - Standup meeting
  - Daily report emails
  - Weekly email reports
  - Project status/progress meetings
  - Major milestone meetings
  - Closure Report

Project Plan Elements for Project Control

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Requirements Management

How to:

- Define Requirement Life Cycle in the project
  - Trace requirements
  - Prioritize requirements
  - Maintain requirements
  - Baseline requirements
  - Assess requirement changes
- Define standards, methodology and approach, tools and template.
- Maintain deliverable needs, scope, viewpoint of stakeholders
- Manage project success criteria, UAT viewpoints.
- Manage deliveries

Project Plan Elements for Project Control

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Quality Management

Define:

- Quality Control Gates in Development Life Cycle of the project
  - Quality metrics, LCL and UCL of each metric
  - Review/control scheduling and milestones
  - Completion Criteria: determine if pass/fail the gate
- Inspection/review and audit methods/processes
- Preparations for quality analysis:
  - Analysis methods
  - Quality category structure
  - Cost of quality
- Standards, Conventions, Checklists and Tools applied

Tips for Project Planning

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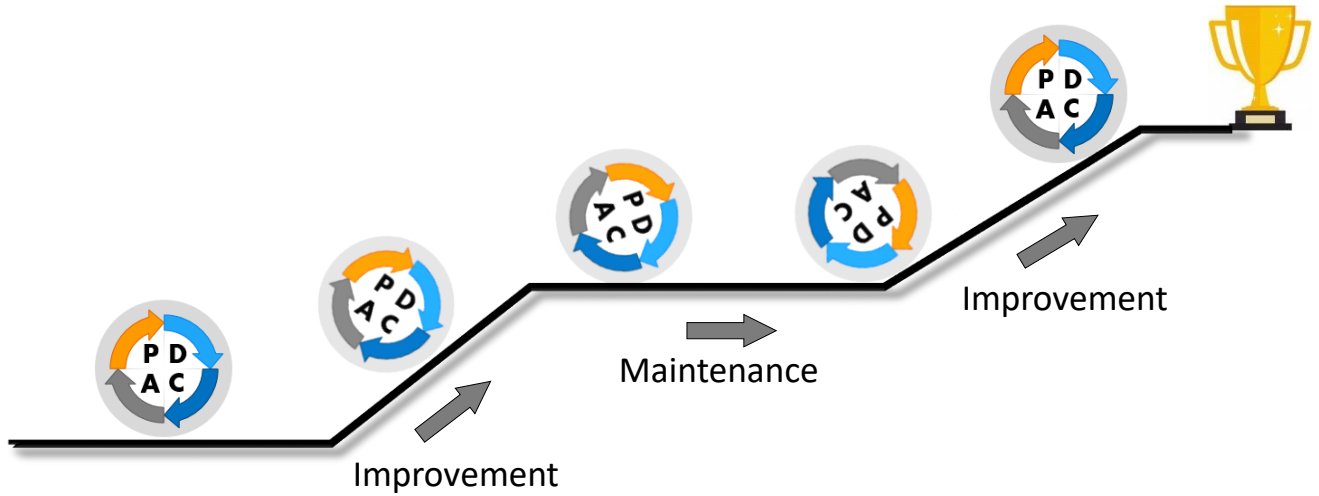
Avoid mistakes: Use this checklist

- Be sure project objectives are aligned with the business
- Develop realistic scope, estimates and schedules
- Secure the necessary resources
- Your plans must include the project control elements
- Execute your project by following your plan
- Ensure the stakeholders are on board – and keep them on board



Summary

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Importance of The Project Definition

Deliverables and Work Breakdown Structure (WBS)

Acceptance Criteria

Resources and Estimates

Scheduling and Resource Loading

Elements of Project Control